Graph of Thoughts: Solving Elaborate Problems with Large Language Models

Abstract

We introduce Graph of Thoughts (GoT): a framework that advances prompting capabilities in large language models (LLMs) beyond those offered by paradigms such as Chain-of-Thought or Tree of Thoughts (ToT). The key idea and primary advantage of GoT is the ability to model the information generated by an LLM as an arbitrary graph, where units of information ("LLM thoughts") are vertices, and edges correspond to dependencies between these vertices. This approach enables combining arbitrary LLM thoughts into synergistic outcomes, distilling the essence of whole networks of thoughts, or enhancing thoughts using feedback loops. We illustrate that GoT offers advantages over state of the art on different tasks, for example increasing the quality of sorting by 62% over ToT, while simultaneously reducing costs by >31%. We ensure that GoT is extensible with new thought transformations and thus can be used to spearhead new prompting schemes. This work brings the LLM reasoning closer to human thinking or brain mechanisms such as recurrence, both of which form complex networks